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Talking Paper for SecDef's Meeting with
Director Zhang Aiping and Vice Director Qian Weishen, of
National Defense and Science Technology Commission
2000 Hours, Tuesday, January 8, 1980

It is a pleasure for me to have this opportunity to meet with you. We have been in China for three days now and we have been warmly welcomed -- and we have had many and lengthy substantive discussions on important policy issues. As you know, I am a scientist as well, and retain many of my interests going back to Livermore Laboratory and to CalTech. This evening has been arranged to permit me to meet informally with colleagues with a common interest in science and in military technology. I do not have any specific proposals to make or weighty matters to discuss. We have done much of this already, as you know. I propose that we spend a short time now in informal discussions concerning military research and technology.

/At this point, you might make any personal comments -- Zhang and Qian both sat at your table at the banquet -- also there may be someone there you knew at CalTech -- I have not received the final list -- will add to this paper later./

I would like to suggest that we cover the following topics:

- Organization of research activities and interaction between civilian and military research and technology.
- Role of universities in military research.
- Allocation of resources on kinds of research and areas of research.

Is this acceptable, and do you have any topics you would like to raise?

/Pause for PRC response./

Research activity in the United States is very extensive, including both civilian and military activities. The research is carried out in universities, government laboratories, and industrial organizations. The U.S. Government is a major sponsor of research, but much is also sponsored by industry and private foundations.

Dr. Frank Press, Science Adviser to the President, is the senior person in the Executive Branch with responsibility for scientific research and development. He has been to China several times and will be here again at the end of the month. He will be meeting with Fang Yi. Dr. William Perry, my Under Secretary for Research and Engineering, is the senior official responsible for military research and development. Dr. Dinneen, who is with me this evening, is his Principal Deputy. Therefore, this meeting and others which Dr. Dinneen has held with Mr. Liu Huaqing, Asst. to Chief of General Staff, are the first formal contacts between senior officials of our two countries responsible for military research and development. Dr. Press and Dr. Perry meet frequently to share ideas and to coordinate research activities between military and civilian. In some areas, such as space, we have large civilian programs under NASA and also significant military space programs under the Department of Defense. In other areas, such as energy, nearly all of the research is monitored by a civilian agency --

the Department of Energy. We believe that this interaction between civilian and military research is important and beneficial. Let me give you just one example: In the early 1950's, the military was the principal supporter of work in computers and electronic circuits. During the 60's and 70's, a large commercial enterprise ^{was} developed for civilian computers, including hand held computers based to a large extent on the early military research. This developed many new equipments and integrated circuits for commercial and entertainment purposes. This in turn provided useful technology for military equipment. Now we are engaging in new research on very high speed integrated circuits which are primarily needed for military applications. ^{This is a good example of the interaction between civilian and military research.} That is all I planned to say now.

I think it is premature for us to consider cooperative programs in military research and technology similar to those initiated by Dr. Press in the civilian area.

However, it might be useful to continue informal discussions among our colleagues. I would be interested in hearing your views on the organization of research and, in particular, the interaction between civilian and military research -- either now or at the end of my comments.

/Pause for possible PRC comment./

Now, I would like to speak about the role of universities in military research. Our universities are, of course, primarily concerned with basic research. This fundamental work is in

Physics, Chemistry, Mathematics, as well as Engineering. It tends to be more pure than applied. However, a significant portion is supported by the Department of Defense and there is good discussion between the researchers and the sponsors in the Department of Defense. Also, many of our senior researchers participate in committees which advise me and others in the Department of Defense on military matters. Finally, some of our universities operate large research laboratories which carry out more applied and in some cases classified military research. During several recent visits to universities, I sense a growing interest in military research and development. This could lead to an increased participation by the universities in our business. I would appreciate hearing your views on university participation in military research and development in China.

/Pause here for PRC response./

Now finally, I will talk briefly about allocation of resources among kinds of research and areas of research. I think you know that we propose a budget to the President. It is reviewed by him with the help of his staff, particularly Office of Management and Budget. Mr. Jayne, who is with me tonight, is the senior official in that organization for national security. He reviews our proposals and can advise the President on the makeup of the DOD program. In doing this, he takes into account the activities supported by the US Government in civilian research and technology. After

the President submits his budget, there are further reviews by our Congress. Through all these reviews we arrive at a program balanced within areas and among kinds of research.

However, it is important that my initial submission is developed to meet those objectives. That is the responsibility of Dr. Perry and Dr. Dinneen. I want to say only one thing more about allocation of resources. That is that we have decided to insure a strong technological base by insuring that our more fundamental research programs are allowed to grow. These investments, although they do not pay off for many years, are most important. The development of a strong research and development community is a lengthy process. I believe China has begun well in its four modernizations. I wish you well, and am pleased to be with you. This completes my comments.